Taking Ownership of Your Data

Different Ways to View Data

- 24 x 31's
- One Minute Data
- Hourly Data
- Request a Trend and Compare to Other Data
- Compare Data Points in Excel (intensive but pays off when questions arise)

24 x 31’s

- Does your data look normal?
- If not, edit the 24x31 prior to submitting it to QA
- It’s in the Data Validation Procedure

Monthly Running Average Report
Run Date: 01/28/05 02:43
(1 Hour Rolling Averages)

SITE NAME:
ADDRESS:
LAT/LONG:
ELEVATION:

PARAMETER NAME: TPM25
PARAMETER CODE: 88101
METHOD: 79 UNITS: UG/M3

MONTH:
YEAR:
DECIMAL POSITIONER: 1
PROJECT: 01

Hourly Averages
Beginning Hour (PST)

DA	C	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	MAX	RDS
01	WE	71	57	59	51	36	44	80	128	171	191	82	25	41	69	___D	999	1219	768	706	608	663	606	497	398	32.9	121.9	23
02	TH	204	109	93	100	28	46	67	105	125	320	136	122	70	76	55	104	94	117	103	118	110	221	193	233	12.3	32.0	24
03	FR	224	217	227	223	244	273	253	251	266	308	293	207	92	64	18	83	94	72	67	64	188	149	90	111	17.0	30.8	24
04	SA	134	68	56	50	33	22	18	13	38	49	21	111	114	24	65	61	122	153	165	180	190	200	110	110	8.8	20.0	24
05	SU	73	101	54	9	29	42	38	34	68	66	106	49	13	10	1	44	103	48	79	52	46	16	5	18	4.6	10.6	24
06	MO	5	14	9	6	2	22	32	19	40	67	32	44	136	33	17	2	1	11	308	110	55	80	84	52	4.9	30.8	24
07	TU	61	61	22	6	13	22	41	25	41	59	23	15	36	17	46	9	21	24	30	27	41	18	39	14	3.0	6.1	24
08	WE	30	38	102	32	43	27	32	34	115	95	97	61	68	40	76	101	103	107	150	78	127	124	112	171	8.2	17.1	24
09	TH	160	137	110	90	98	78	104	59	104	127	82	73	69	34	69	107	100	110	101	115	77	44	86	53	9.1	16.0	24
10	FR	66	12	13	16	16	21	24	38	61	57	13	20	21	8	37	51	26	19	26	58	32	29	56	40	3.2	6.6	24
11	SA	26	64	53	38	11	38	30	23	46	83	57	35	11	5	42	38	56	81	88	69	67	105	80	4	4.8	10.5	24
12	SU	1	17	7	2	2	0	4	20	34	12	25	19	14	10	10	1	28	34	41	46	38	20	39	38	1.9	4.6	24
13	MO	32	16	42	7	32	34	39	66	151	149	112	89	92	51	37	50	67	77	90	109	150	132	92	97	7.5	15.1	24
14	TU	38	44	50	62	70	85	68	71	113	91	66	44	78	30	28	55	59	109	143	169	162	214	181	241	9.5	24.1	24
15	WE	226	185	182	154	122	118	189	179	188	___D	61	112	151	145	109	86	125	177	235	312	289	305	354	188	18.2	35.4	23
16	TH	263	167	115	68	67	122	104	87	211	259	348	166	180	189	133	135	181	224	145	157	247	226	346	312	18.6	34.8	24
17	FR	291	282	271	251	193	275	182	190	244	232	294	126	100	151	151	28	54	46	105	205	147	193	237	260	18.8	29.4	24
18	SA	281	237	290	253	241	273	249	212	264	401	142	110	31	36	24	-1	8	38	100	117	208	268	209	191	17.4	40.1	24
19	SU	252	188	271	150	172	150	137	122	103	140	137	129	151	243	213	22	62	49	74	129	248	333	247	347	16.9	34.7	24
20	MO	355	270	203	145	188	203	217	182	188	180	249	328	168	44	45	77	79	135	283	304	327	419	406	323	22.2	41.9	24
21	TU	335	270	264	295	282	226	249	242	202	162	127	17	10	1	27	38	75	91	109	98	67	93	78	95	14.4	33.5	24
22	WE	75	72	45	74	71	71	102	138	151	171	114	91	122	67	80	129	116	149	162	214	242	202	146	116	12.2	24.2	24
23	TH	92	76	42	7	5	10	54	46	50	100	87	84	89	93	122	68	98	139	141	168	168	138	41	65	8.3	16.8	24
24	FR	64	70	56	79	47	43	56	41	30	72	99	144	241	127	171	145	179	226	214	209	197	196	130	131	12.4	24.1	24
25	SA	144	60	51	22	16	12	21	32	74	102	59	67	80	78	68	77	59	47	128	49	73	66	74	45	6.3	14.4	24
26	SU	11	8	24	22	17	9	6	33	32	74	101	71	12	34	66	58	123	127	196	202	231	354	373	381	10.7	38.1	24
27	MO	404	228	144	86	83	114	66	80	156	298	118	65	32	43	41	16	-1	45	202	118	176	181	223	307	13.4	40.4	24
28	TU	300	232	227	207	197	168	191	223	280	393	274	377	19	___D	-1	11	162	261	375	313	301	367	411	417	24.8	41.7	23
29	WE	372	273	174	69	40	21	28	22	121	111	77	87	89	115	130	99	110	176	255	357	239	215	109	99	14.1	37.2	24
30	TH	91	32	103	68	105	98	123	58	216	257	105	73	76	117	64	205	106	73	47	64	59	56	81	133	10.1	25.7	24
31	FR	232	225	212	176	140	101	80	134	230	403	253	6	17	52	15	42	40	33	74	114	165	113	84	26	12.4	40.3	24
AVG		159	123	115	91	85	89	93	94	133	168	122	96	78	67	65	95	118	121	159	159	172	183	168	162	12.1		
MAX		404	282	290	295	282	275	253	251	280	403	348	377	241	243	213	999	1219	768	706	608	663	606	497	417		121.9	
DAYS		31	31	31	31	31	31	31	31	31	30	31	31	31	30	30	31	31	31	31	31	31	31	31	31			741

Monthly Running Average Report
Run Date: 01/28/05 02:43
(1 Hour Rolling Averages)

SITE NAME:
ADDRESS:
LAT/LONG:
ELEVATION:

PARAMETER NAME: TPM25
PARAMETER CODE: 88101
METHOD: 79 UNITS: UG/M3

MONTH:
YEAR:
DECIMAL POSITIONER: 1
PROJECT: 01

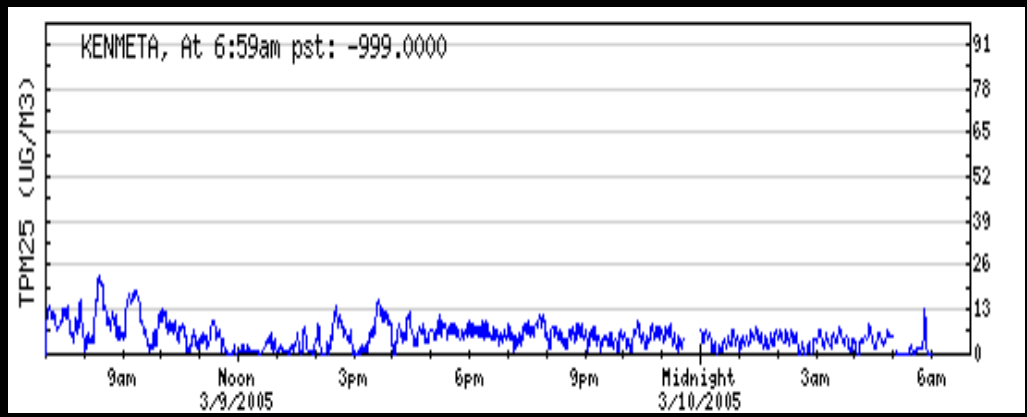
Hourly Averages
Beginning Hour (PST)

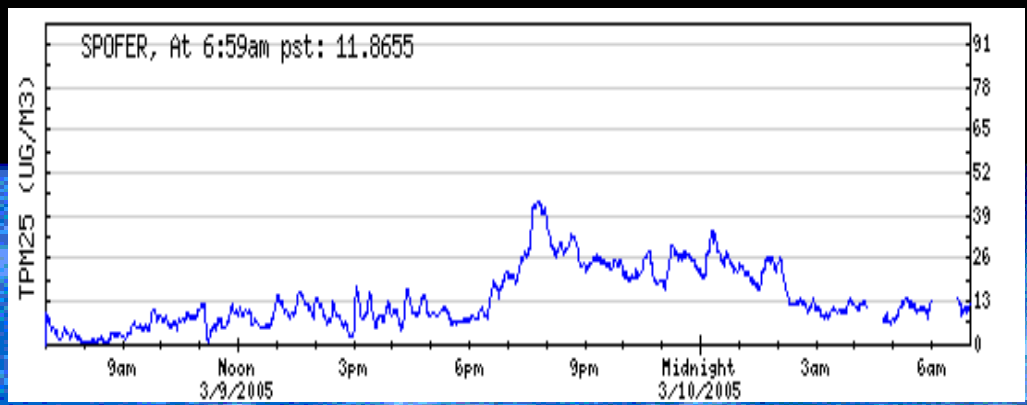
DA	C	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	MAX	RDS
01	WE	71	57	59	51	36	44	80	128	171	191	82	25	41	69	___D	999	1219	768	706	608	663	606	497	417	32.9	121.9	23
02	TH	204	109	93	100	28	46	67	105	125	320	136	122	70	76	55	104	94	117	103	118	110	221	193	233	12.3	32.0	24
03	FR	224	217	227	223	244	273	253	251	266	308	293	207	92	64	18	83	94	72	67	64	188	149	90	111	17.0	30.8	24
04	SA	134	68	56	50	33	22	18	13	38	49	21	111	114	24	65	61	122	153	165	180	190	200	110	110	8.8	20.0	24
05	SU	73	101	54	9	29	42	38	34	68	66	106	49	13	10	1	44	103	48	79	52	46	16	5	18	4.6	10.6	24
06	MO	5	14	9	6	2	22	32	19	40	67	32	44	136	33	17	2	1	11	308	110	55	80	84	52	4.9	30.8	24
07	TU	61	61	22	6	13	22	41	25	41	59	23	15	36	17	46	9	21	24	30	27	41	18	39	14	3.0	6.1	24
08	WE	30	38	102	32	43	27	32	34	115	95	97	61	68	40	76	101	103	107	150	78	127	124	112	171	8.2	17.1	24
09	TH	160	137	110	90	98	78	104	59	104	127	82	73	69	34	69	107	100	110	101	115	77	44	86	53	9.1	16.0	24
10	FR	66	12	13	16	16	21	24	38	61	57	13	20	21	8	37	51	26	19	26	58	32	29	56	40	3.2	6.6	24
11	SA	26	64	53	38	11	38	30	23	46	83	57	35	11	5	42	38	56	81	88	69	67	105	80	4	4.8	10.5	24
12	SU	1	17	7	2	2	0	4	20	34	12	25	19	14	10	10	1	28	34	41	46	38	20	39	38	1.9	4.6	24
13	MO	32	16	42	7	32	34	39	66	151	149	112	89	92	51	37	50	67	77	90	109	150	132	92	97	7.5	15.1	24
14	TU	38	44	50	62	70	85	68	71	113	91	66	44	78	30	28	55	59	109	143	169	162	214	181	241	9.5	24.1	24
15	WE	226	185	182	154	122	118	189	179	188	___D	61	112	151	145	109	86	125	177	235	312	289	305	354	188	18.2	35.4	23
16	TH	263	167	115	68	67	122	104	87	211	259	348	166	180	189	133	135	181	224	145	157	247	226	346	312	18.6	34.8	24
17	FR	291	282	271	251	193	275	182	190	244	232	294	126	100	151	151	28	54	46	105	205	147	193	237	260	18.8	29.4	24
18	SA	281	237	290	253	241	273	249	212	264	401	142	110	31	36	24	0	8	38	100	117	208	268	209	191	17.4	40.1	24
19	SU	252	188	271	150	172	150	137	122	103	140	137	129	151	243	213	22	62	49	74	129	248	333	247	347	16.9	34.7	24
20	MO	355	270	203	145	188	203	217	182	188	180	249	328	168	44	45	77	79	135	283	304	327	419	406	323	22.2	41.9	24
21	TU	335	270	264	295	282	226	249	242	202	162	127	17	10	1	27	38	75	91	109	98	67	93	78	95	14.4	33.5	24
22	WE	75	72	45	74	71	71	102	138	151	171	114	91	122	67	80	129	116	149	162	214	242	202	146	116	12.2	24.2	24
23	TH	92	76	42	7	5	10	54	46	50	100	87	84	89	93	122	68	98	139	141	168	168	138	41	65	8.3	16.8	24
24	FR	64	70	56	79	47	43	56	41	30	72	99	144	241	127	171	145	179	226	214	209	197	196	130	131	12.4	24.1	24
25	SA	144	60	51	22	16	12	21	32	74	102	59	67	80	78	68	77	59	47	128	49	73	66	74	45	6.3	14.4	24
26	SU	11	8	24	22	17	9	6	33	32	74	101	71	12	34	66	58	123	127	196	202	231	354	373	381	10.7	38.1	24
27	MO	404	228	144	86	83	114	66	80	156	298	118	65	32	43	41	16	0	45	202	118	176	181	223	307	13.4	40.4	24
28	TU	300	232	227	207	197	168	191	223	280	393	274	377	19	___D	0	11	162	261	375	313	301	367	411	417	24.8	41.7	23
29	WE	372	273	174	69	40	21	28	22	121	111	77	87	89	115	130	99	110	176	255	357	239	215	109	99	14.1	37.2	24
30	TH	91	32	103	68	105	98	123	58	216	257	105	73	76	117	64	205	106	73	47	64	59	56	81	133	10.1	25.7	24
31	FR	232	225	212	176	140	101	80	134	230	403	253	6	17	52	15	42	40	33	74	114	165	113	84	26	12.4	40.3	24
AVG		159	123	115	91	85	89	93	94	133	168	122	96	78	67	65	95	118	121	159	159	172	183	168	162	12.1		
MAX		404	282	290	295	282	275	253	251	280	403	348	377	241	243	213	999	1219	768	706	608	663	606	497	417		121.9	
DAYS		31	31	31	31	31	31	31	31	31	30	31	31	31	30	30	31	31	31	31	31	31	31	31	31			741

One Minute Data

You can use graphical one minute data to diagnose problems you may not see with hourly data or 24x31 reports

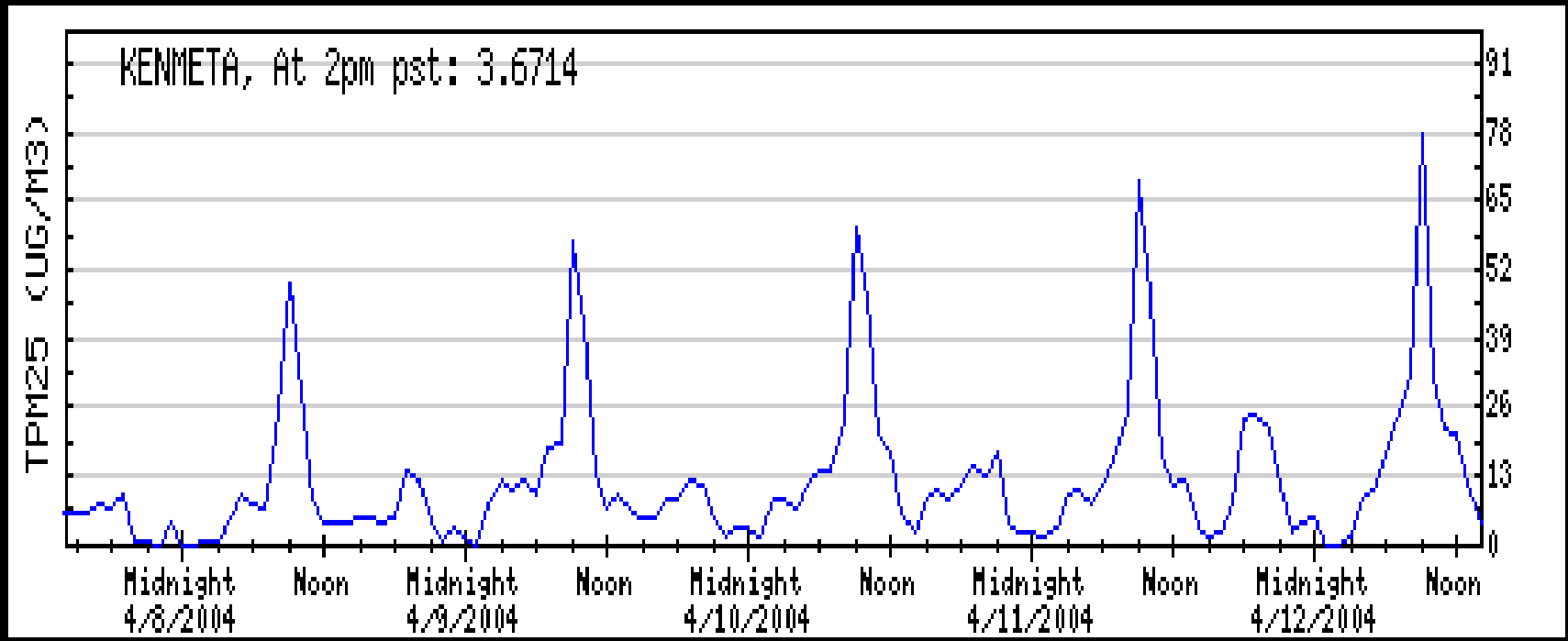
Comparing one TEOM output to another you might suspect that the filter needs to be reseated





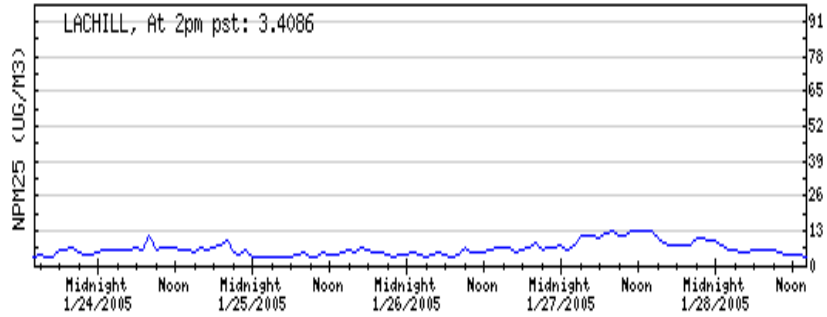
Hourly Data

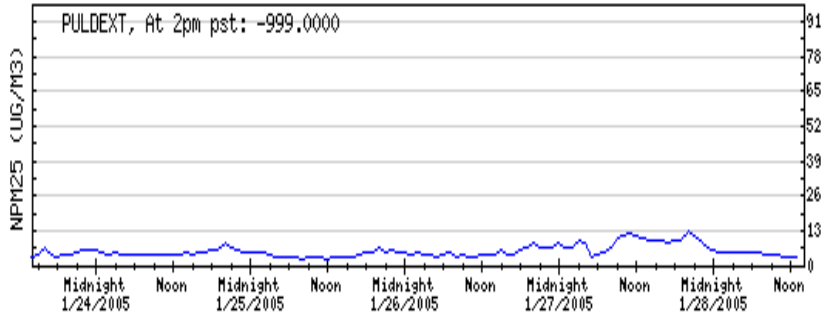
It can be used to see problems not evident when displayed in other formats

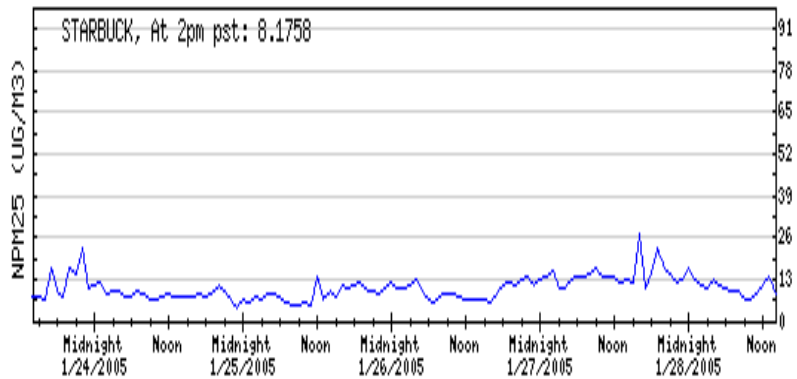

KENMETA, At 2pm pst: 3.6714
TPM25 (UG/M3)
91
78
65
52
39
26
13
0
Midnight
4/8/2004
Noon
Midnight
4/9/2004
Noon
Midnight
4/10/2004
Noon
Midnight
4/11/2004
Noon
Midnight
4/12/2004
Noon

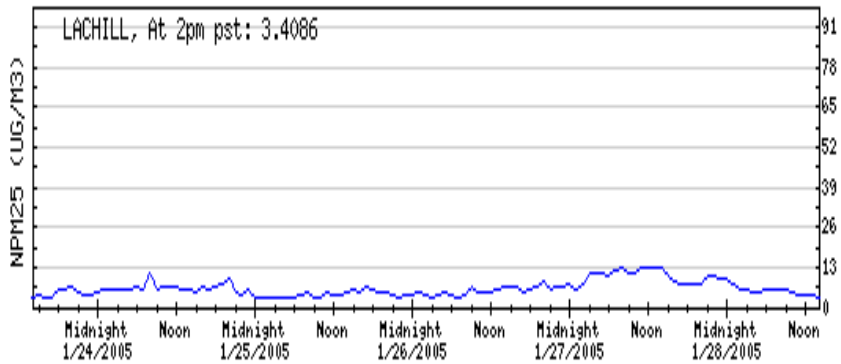
- Each day the amplitude of the spike increased
- The spikes occur at the same time each day
- Although the exact problem was never pinpointed when the operator was alerted to the problem the pump was replaced, the filter changed, and inlet temperature changed
- The problem went away

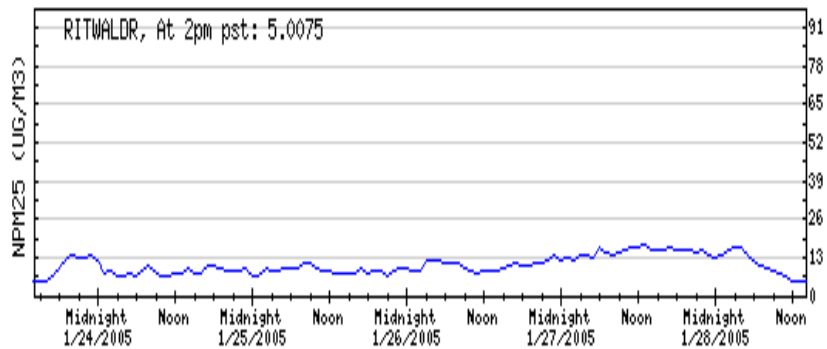
Request a Trend and Compare to Other Data

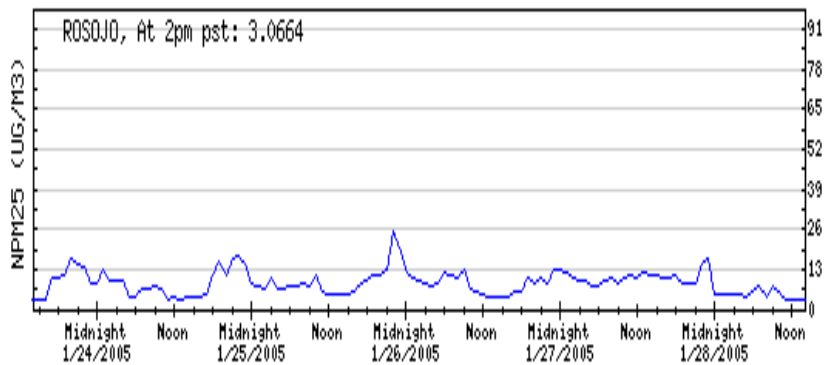

LACHILL, At 2pm pst: 3.4086
NPM25 (UG/M3)
91
78
65
52
39
26
13
0
Midnight 1/24/2005
Noon
Midnight 1/25/2005
Noon
Midnight 1/26/2005
Noon
Midnight 1/27/2005
Noon
Midnight 1/28/2005
Noon


PULDEXT, At 2pm pst: -999.0000
NPM25 (UG/M3)
91
78
65
52
39
26
13
0
Midnight 1/24/2005
Noon
Midnight 1/25/2005
Noon
Midnight 1/26/2005
Noon
Midnight 1/27/2005
Noon
Midnight 1/28/2005
Noon


STARBUCK, At 2pm pst: 8.1758
NPM25 (UG/M3)
91
78
65
52
39
26
13
0
Midnight 1/24/2005
Noon
Midnight 1/25/2005
Noon
Midnight 1/26/2005
Noon
Midnight 1/27/2005
Noon
Midnight 1/28/2005
Noon


LACHILL, At 2pm pst: 3.4086
NPM25 (UG/M3)
91
78
65
52
39
26
13
0
Midnight 1/24/2005
Noon
Midnight 1/25/2005
Noon
Midnight 1/26/2005
Noon
Midnight 1/27/2005
Noon
Midnight 1/28/2005
Noon


RITWALDR, At 2pm pst: 5.0075
NPM25 (UG/M3)
91
78
65
52
39
26
13
0
Midnight 1/24/2005
Noon
Midnight 1/25/2005
Noon
Midnight 1/26/2005
Noon
Midnight 1/27/2005
Noon
Midnight 1/28/2005
Noon


ROSOJO, At 2pm pst: 3.0664
NPM25 (UG/M3)
91
78
65
52
39
26
13
0
Midnight 1/24/2005
Noon
Midnight 1/25/2005
Noon
Midnight 1/26/2005
Noon
Midnight 1/27/2005
Noon
Midnight 1/28/2005
Noon

Compare Data Points in Excel (intensive but pays off when questions arise)

The modeled PM2.5 is reading higher than the PM10 TEOM. Is the PM2.5 model wrong or is the PM10 TEOM operating properly?

Date	PM2.5 FRM	PM2.5 Model	Diff	PM10 FRM	PM10 TEOM	Diff
10/06/06				19	43	24
10/09/04	3.5	4.1	0.6			
10/12/04	7.5	7.8	0.3	22	41	19
10/15/04	4.2	5.0	0.8			
10/18/04	5.1	5.0	-0.2	11	13	2
10/21/04	6.8	6.7	-0.2			
10/24/04	11.7	10.7	-1.0	17	33	16
10/27/04	11.8	12.1	0.2			
10/30/04	3.3	3.5	0.2	10	63	53
11/02/04	7.0	7.8	0.8			
11/05/04	37.1	31.2	-6.0	56	46	-10
11/08/04	44.3	45.3	0.9			
11/11/04	19.6	20.3	0.7	34	27	-7
11/14/04	26.1	29.0	2.9			
11/17/04	14.1	11.8	-2.3	26	18	-8
11/20/04	10.9	2.9	-8.0			
11/23/04				91	76	-15
11/26/04	17.1	15.4	-1.7			
11/29/04	33.3	29.0	-4.3	56	44	-12
12/02/05	43.6	42.0	-1.6			
12/05/05	20.6	***24.5***	3.9	30	18	-12
12/08/05	12.0	11.8	-0.2			
12/11/05	1.8	1.4	-0.4	8	4	-4
12/14/05	33.5	25.0	-8.5			
12/17/05	21.4	***21.0***	-0.4	31	15	-16
12/20/05	10.3	8.0	-2.3			
12/23/05	26.9	21.0	-5.9	46	29	-17
12/26/05	38.7	35.3	-3.4			
12/29/05	21.9	***19.5***	-2.4	26	13	-13

- PM2.5 values cannot be higher than the PM10 values
- It’s clear that the PM10 TEOM does not compare with the PM10 FRM
- The PM2.5 FRM tracks the model very well
- It’s easy to conclude the PM10 TEOM is operating erratically

Compare Data Points in Excel (intensive but pays off when questions arise)

The FRM and PM2.5 TEOM do not agree. What is the problem?

	PM2.5 FRM	PM2.5 TEOM	Diff
11/02/04	8.1	5.9	-2.2
11/05/04	35.4	21.9	-13.5
11/08/04	43.7	24.3	-19.4
11/11/04	33.8	23.7	-10.1
11/14/04	33.6	20.1	-13.5
11/17/04	18	10.1	-7.9
11/20/04	21.5	12.3	-9.2
11/23/04	22.1	12.7	-9.4
11/26/04	18.9	10.1	-8.8
11/29/04	19.4	9.6	-9.8
12/02/04	30.1	12.3	-17.8
12/05/04	8.5	4.6	-3.9
12/08/04	6.1	8.2	2.1
12/11/04	4.8	4.8	0.0
12/14/04	10	9.5	-0.5
12/17/04	27.6	18.8	-8.8
12/20/04	31.8	22.2	-9.6
12/23/04	13.7	8.3	-5.4
12/26/04	15.3	10.7	-4.6
12/29/04	**16.6**	**14.1**	**-2.5**

In this case, the TEOM inlet temperature had not been adjusted from 50° to 30° C